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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/823,600	03/30/2001	David Chong Sook Lim	17732-3856000	6055

7590

09/19/2002

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EXAMINER

ANDUJAR, LEONARDO

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 09/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/823,600

Applicant(s)

SOOK LIM ET AL.

Examiner

Leonardo Andújar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 9-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Acknowledgment

1. The amendment filed on 06/27/2002, paper no. 9, in response to the Office action mailed on 04/10/02 has been entered. The present Office action is made with all the suggested amendments being fully considered. Accordingly, pending in this Office action are claims 1-15

Election/Restrictions

2. Applicant's election of claims 1-8 in Paper No. 9 is acknowledged. Since applicant did not presented any argument about the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 4, 5, 7, 8 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Suyama et al. (US 5731630).

5. Regarding claim 1, Suyama (e.g. fig. 4) shows a die attach package comprising:

- A substrate 1 having a plurality of leads 7 for connections to a die down die 8 and to a printed circuit board 101;

- An electrically and non-conductive means 9 to physically connect the die to the substrate 1;
- A plurality of connectors 22 corresponding in number to the number of leads to electrically connect the die to the leads.

6. Also, Suyama shows that the leads are arranged as a part of the substrate such that they pass under the die when the die is connected to the substrate. The leads on the substrate terminate at points that correspond to a die up orientation.

7. Regarding claim 2, Suyama shows that the leads are formed as traces on the substrate.

8. Regarding claim 4, Suyama discloses that the substrate is an organic substrate (col.3 /lls.39-44).

9. Regarding claim 5, Suyama shows a first traces ends are connected to the substrate vias (e.g. 5 and 6). Also, the second traces ends are connected to the plurality of connectors. As shown in figure 4, the vias connect the traces to the printed circuit board.

10. Regarding claim 7, Suyama shows that the plurality of leas form part of a lead frame (e.g. fig. 8).

11. Regarding claim 8, Suyama disclose that the means to physically connect the die to the substrate is an adhesive (col. 4/ll. 17).

12. Regarding claim 15, Suyama (e.g. fig. 4) shows a package for electrically connecting a chip 8 having a die down configuration. The package with the die down

chip provides electrical connections in the die upconfiguration, the die down attach package comprises:

- A substrate 1 having a plurality of leads 7 each defining a first end and a second end;
- An electrically non conductive means 9 for connection the chip die down to the substrate;
- And plurality of first connectors 22 corresponding in number to the number of first ends.

13. The first ends connect the die down chip 8. Also, Suyama shows that first connectors are electrically connected to the first end of the leads. The second ends of the leads are arranged on the substrate such that they correspond to the die up configuration.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

16. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suyama et al. (US 5731630) in view of Akram (US 6,064,116).

17. Suyama shows most aspects of the instant invention including a substrate made of an organic material such as glass epoxy (see comments above). However, Suyama does not explicitly suggest the use of ceramic as substrate material. Akram teaches that ceramic materials are widely used as substrate material. Moreover, Akram discloses that ceramics are superior in heat transfer characteristics than glass epoxy (col. 1/lls. 54-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make Suyama's substrate of ceramic in order to have a substrate with superior heat transfer characteristics as taught by Akram.

18. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suyama et al. (US 5731630) in view of Wang (US 2001/0033017).

19. Suyama shows most aspects of the instant invention including a plurality of connectors 22 such as solder (see comments above). However, Suyama does not explicitly suggest the use of wires. Wang teaches that the selection of the bonding technique (solder or wire bonding) is a matter of design choice e.g. desired number and spacing of signal input-output (I/O) connections on the chip and the substrate as well as permissible cost [0005]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use metal wires as connectors in Suyama's

invention since the use of wire or solder bonding is a matter of design choice as taught by Wang.

Response to Arguments

20. Applicant's arguments filed on 06/27/2002 have been fully considered but they are not persuasive. In response to applicant argument that the new added limitation "wherein the leads on the substrate terminate at points that correspond to the die up orientation", it is respectfully noted that Suyama 's figure 4 shows this limitation. The lead 7 includes two ends. The ends that are connected to the chip via the connector 22 are recognized as first ends. The other ends are recognized as second ends. Also, the second ends terminate at points that correspond to a die up orientation.

21. In response to applicant's argument regarding claim 15 see comments stated above in paragraphs 12-13, which are considered repeated here.

Conclusion

22. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the

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statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

23. Papers related to this application may be submitted directly to Art Unit 2826 by facsimile transmission. Papers should be faxed to Art Unit 2826 via the Art Unit 2826 Fax Center located in Crystal Plaza 4, room 3C23. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2826 Fax Center number is **(703) 308-7722** or **-7724**. The Art Unit 2826 Fax Center is to be used only for papers related to Art Unit 2814 applications.

24. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Leonardo Andújar** at **(703) 308-0080** and between the hours of 9:00 AM to 7:00 PM (Eastern Standard Time) Monday through Thursday or by e-mail via Leonardo.Andujar@uspto.gov. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn, can be reached on (703) 308-6601.

25. Any inquiry of a general nature or relating to the status of this application should be directed to the **Group 2800 Receptionist** at **(703) 305-3900**.

26. The following list is the Examiner's field of search for the present Office Action:

U.S. Class / Subclass (es): 257/678, 693 and 697		09/02
Other Documentation:		
Electronic Database(s): East (USPAT, US PGPUB, JPO, EPO, Derwent, IBM TDB)		09/02

Leonardo Andújar
Patent Examiner Art Unit 2826

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